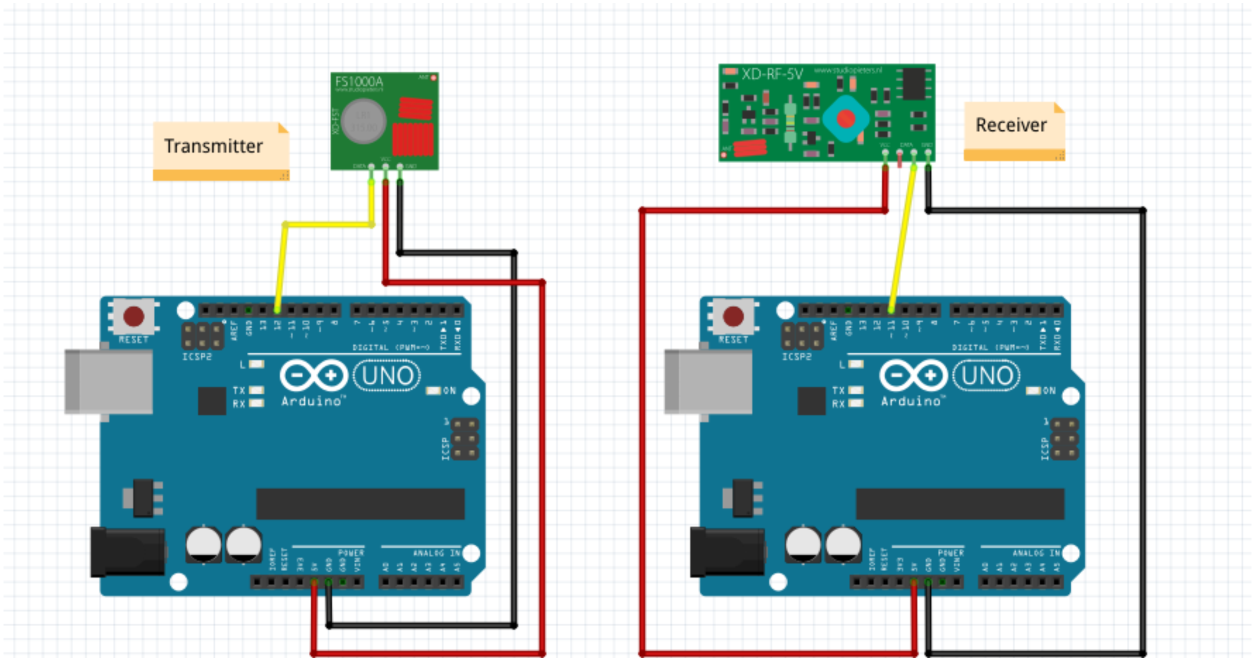
RF Transmitter and Receiver Module

INTRODUCTION : RF stand for radio frequency. The function of this Arduino module is basically to transfer data from one Arduino to another using a transmitter circuit and a receiver circuit employing the radio frequencies.

CIRCUITS: As mentioned above this basically includes two separate circuits. One at the transmitting end known as a transmitter circuit and other at receiving end known as receiving circuit. The transmitter circuit has a RF 433MHz Transmitter where as the receiver circuit has a RF 433MHz Receiver. The respective circuit diagrams are given below.



In the transmitter circuit the VCC pin of the transmitter is connected to 5V of Arduino, GND of the transmitter is connected to the GND of Arduino and the ATAD pin is connected any output pin of Arduino. A copper coil is attached to the antenna of the transmitter to increase range (if required).

In the receiver circuit the VCC pin of the receiver is connected to 5V of Arduino, GND of the receiver is connected to the GND of Arduino and the ATAD pin is connected any input pin of Arduino. A copper coil is attached to the antenna of the receiver to increase range (if required).

Work Flow: The Arduino of the transmitter circuit receives the message to be transmitted by the code given to it. It conveys this message to the transmitter which transmits this message using radio frequencies. The receiver receives the message and converts it to electrical signals before passing on to the receiving Arduino.

Transmitter Code:

```
#include<RH_ASK.h>   //This library is included in order to perform RF Transmission and receiving
#include<SPI.h>  // This library is required by the radio head ask library to work properly

RH_ASK trans;   //An object is declared so that special functions can be accessed

void setup() {
  Serial.begin(9600);
  trans.init()   //The object is initialized
}

void loop() {
  char *message = "Transmitted Message";  //This is the prepared message to be transmitted
  trans.send((uint8_t *)message, strlen(message)); //Takes the message and its size to be transmitted
  trans.waitPacketSent();  //Waits for any previous transmission to complete
  exit(0);  //Exits the loop function
}
```

Receiver Code:

```
#include<RH_ASK.h>
#include<SPI.h>

RH_ASK recvr;

void setup() {
  // put your setup code here, to run once:
  recvr.init();
  Serial.begin(9600);
}

void loop() {
  // put your main code here, to run repeatedly:
  uint8_t message[27];  //The message size is taken 27 because 27 is the limit of text so that the module works properly
  uint8_t messagelgt = sizeof(message); //This stores the size of received message
  if(recvr.recv(message,&messagelgt)) {  //the function recv() turns the receiver on and copies any valid msg to its parameter
  Serial.print("The Received message is: ");
  Serial.println((char*)message);
  }
  exit(0);
}
```

BY-

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